CENTER FOR ADVANCED AVIATION SYSTEM DEVELOPMENT (CAASD)

DataXtend Semantic Integrator (DXSI Tool) Evaluation

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Definitions

- **Semantic Integration:**
  - **Interrelates data from different schema**
  - **Commonly uses data mapping, translation, and mediation**
- **Common Data Model:**
  - **Sources and targets transform data to a common representation**
- **Use of a Common Data Model simplifies Semantic Integration**

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Basic Approach

- Focused on weather domain
  - Researched programs, schemas, services, and proposed common data models
- Examined DXSI tool
  - Learned tool using online help
  - Took training to get questions answered
  - Imported weather schema to examine tool readiness for different domains
    - NNEW schema (WXXS)
    - DOD weather schema (JMBL)
    - Aeronautical information schema (AIXM)
  - Built prototype data flows (source-to-target) to evaluate DXSI mappings

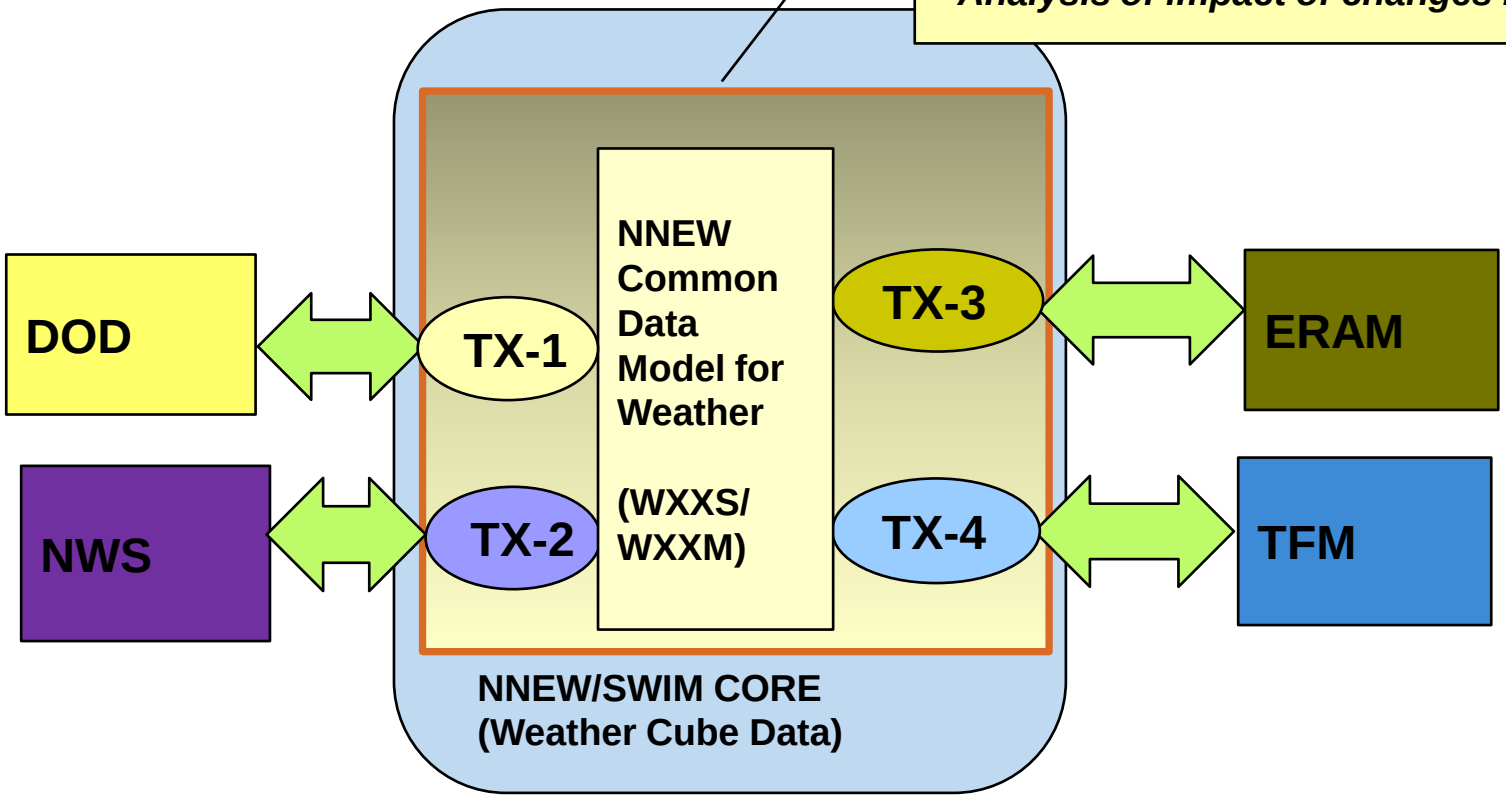
Findings

- **DXSI appears capable of:**
  - **Providing efficient weather data exchange (e.g. validation, transformations, aggregations)**
  - **Managing schema changes by impact analysis from tool**
  - **Supporting XML based weather products only (non-gridded weather data)**
- **Current status:**
  - **Tool does not work well with WXXS schema**
  - **Tool patch required for use with JMBL service**

Scenario for DXSI Use in Weather Cube

DXSI Tool Used For:

- ***Maintenance of common data model***
- ***Defining data and service mappings***
- ***Creating mapping software modules that can be deployed for run-time use***
- ***Analysis of impact of changes in data models***



TX-.. ***Data Mappings, Transformation, Validation, Aggregation***

Data Flow

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Conclusion

- **DXSI appears capable of supporting NNEW proposed common data model (WXXM) in SWIM Core**
  - **However, modifications to the tool and/or weather schema under consideration will be needed because tool does not currently work with WXXS schema**
- **DXSI is a development tool used for data translation**
  - **DXSI could be used in addition to (but not replace) other products in the SWIM Core (e.g., ESB)**
  - **Other tools could be also be used for data translation, e.g., XSLT, Camel**
  - **DXSI is most useful when a common data model is employed**
  - **DSXI simplifies the task of managing all of the translations between multiple schemas, interfaces, and a common data model**
- **DXSI can be best leveraged if:**
  - **Common data model adoption (e.g. WXXM) occurs in weather data exchanges**
  - **Customization, enrichment, governance, and deployment of the common model includes DXSI in its processes**

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